

We claim:

1           1.     An catheter, comprising:  
2                 a hollow catheter body defining a proximal portion and a distal  
3     portion;  
4                 at least one internal component within the distal portion of the  
5     catheter body;  
6                 adhesive material located within the distal portion of the catheter  
7     body about the at least one internal component; and  
8                 a torque transfer device located within at least a portion of the  
9     adhesive material and adapted to engage at least a portion of the at least one  
10    internal component and transfer torque to the at least one internal  
11    component.

1           2.     A catheter as claimed in claim 1, wherein the catheter body  
2     comprises a proximal member and a distal member secured to one another.

1           3.     A catheter as claimed in claim 2, wherein the proximal member  
2     and distal member are secured to one another in a butt bond arrangement.

1           4.     A catheter as claimed in claim 3, further comprising:  
2                 a butt bond sleeve having a portion located within and bonded  
3     to the proximal member and a portion located within and bonded to the distal  
4     member, at least a portion of the adhesive material being located within the  
5     butt bond sleeve.

1           5.     A catheter as claimed in claim 4, wherein the torque transfer  
2     device is located within the butt bond sleeve.

1           6.     A catheter as claimed in claim 4, wherein the torque transfer  
2     device comprises at least one rib projecting inwardly from the butt bond  
3     sleeve.

7. A catheter as claimed in claim 2, wherein the proximal member and distal member define respective proximal and distal portions and one of the proximal member distal portion and the distal member proximal portion overlaps the other, thereby defining an overlapping region.

8. A catheter as claimed in claim 7, wherein the proximal and distal members are thermally bonded at the overlapping region.

9. A catheter as claimed in claim 7, wherein the torque transfer device is located within the overlapping region.

10. A catheter as claimed in claim 1, further comprising:  
a handle connected to the proximal portion of the catheter body.

11. A catheter as claimed in claim 1, wherein the at least one internal component comprises a steering center support having at least one steering wire connected thereto.

12. A catheter as claimed in claim 11, wherein the steering center support includes a relatively wide proximal portion, a tapered central portion and a relatively narrow distal portion.

13. A catheter as claimed in claim 1, wherein the torque transfer device comprises a crimp sleeve disposed substantially around at least a portion of the at least one internal component and in contact with the adhesive material.

14. A catheter as claimed in claim 13, wherein the crimp sleeve comprises a tubular sleeve.

15. A catheter as claimed in claim 13, wherein the crimp sleeve comprises a substantially U-shaped sleeve.

1           16. A catheter as claimed in claim 13, wherein the crimp sleeve  
2 comprises a substantially C-shaped sleeve.

1           17. A catheter as claimed in claim 13, wherein the crimp sleeve  
2 comprises a substantially G-shaped sleeve.

1           18. A catheter as claimed in claim 1, wherein the torque transfer  
2 device comprises a stiffener member being fixedly engaged to the at least  
3 one internal component and in contact with the adhesive material.

1           19. A catheter as claimed in claim 18, wherein the stiffener member  
2 comprises a generally flat member having a curved portion that is engaged to  
3 the at least one internal component and a distally projecting arm portion that  
4 projects into the adhesive material.

1           20. A catheter as claimed in claim 1, wherein the torque transfer  
2 device comprises a laterally extending portion of the at least one internal  
3 component, the laterally extending portion being disposed within the adhesive  
4 material.

1           21. A catheter as claimed in claim 20, wherein the at least one  
2 internal component comprises a steering center support having at least one  
3 steering wire connected thereto.

1           22. A catheter as claimed in claim 1, wherein the torque transfer  
2 comprises a sleeve having at least one inwardly extending rib member  
3 located in the distal portion of the catheter body.

23. A steering mechanism for use with a catheter, comprising:  
a steering center support defining a distal end; and  
at least one steering wire connected to the center support a  
sufficient distance from the distal end of the center support to provide a  
straight distal end when the steering wire is activated to bend the center  
support.

24. A catheter as claimed in claim 23, wherein the center support  
includes a relatively wide proximal portion, a tapered central portion and a  
relatively narrow distal portion, the steering wire being engaged to the  
relatively narrow distal portion.

25. A catheter as claimed in claim 23, wherein the steering wire is  
connected to the center support at a point located approximately one inch  
from the distal end of the center support.

26. A catheter as claimed in claim 23, wherein the center support  
includes a relatively wide proximal portion and a tapered distal portion, the  
steering wire being connected to the relatively wide proximal portion.

27. An apparatus for creating a lesion in body tissue, comprising:  
a catheter body having a distal assembly including a steering  
mechanism adapted to cause the distal assembly to contact body tissue  
along the length of the distal assembly; and  
at least two electrodes supported by the distal assembly and  
capable of creating generally elliptical lesions at least 2 cm long and 7 mm  
deep which are substantially continuous and uniform in depth when a source  
of radiofrequency energy simultaneously conveys radiofrequency energy to  
the at least two electrodes.

1           28. An apparatus as claimed in claim 27, wherein the steering  
2 mechanism is adapted to cause the distal assembly carrying electrodes to  
3 contact body tissue within the crevasse between the inferior vena cava and  
4 tricuspid annulus.

1           29. An apparatus as claimed in claim 27, wherein the steering  
2 mechanism is adapted to cause the distal assembly carrying electrodes to  
3 exert increased force against body tissue.

1           30. A catheter, comprising:  
2 a hollow catheter body having a side wall and an aperture  
3 extending through a predetermined portion of the side wall;  
4 at least one internal component located within the catheter  
5 body; and  
6 adhesive material located within the hollow catheter body such  
7 that at least a portion of the adhesive material is in the vicinity of the side wall  
8 aperture, the adhesive material securing the hollow catheter body to the at  
9 least one internal component.

1           31. A catheter as claimed in claim 30, wherein the at least one  
2 internal component comprises a guide coil.

1           32. A catheter as claimed in claim 30, wherein the at least one  
2 internal component comprises a steering center support.

1           33. A catheter as claimed in claim 30, wherein the at least one  
2 internal component comprises a sleeve covering at least a portion of the  
3 steering center support.

1           34. A catheter as claimed in claim 30, wherein the adhesive material  
2 extends around the periphery of the internal component.

1           35. A catheter as claimed in claim 30, wherein the catheter body  
2 defines a proximal end and a distal end and the side wall aperture is located  
3 substantially adjacent to the proximal end.

1           36. A catheter as claimed in claim 30, wherein the catheter body  
2 comprises a distal member and a proximal member secured to the distal  
3 member and the side wall aperture is located in the proximal member.

1           37. A catheter as claimed in claim 36, wherein the distal member  
2 includes at least one energy transmission element.

1           38. A catheter as claimed in claim 37, wherein the at least one  
2 energy transmission element comprises a tip energy transmission element,  
3 and the at least one internal component is connected to the tip energy  
4 transmission element.

1           39. A catheter as claimed in claim 30, further comprising:  
2 a torque transfer device located within at least a portion of the  
3 adhesive material and adapted to engage at least a portion of the at least one  
4 internal component and transfer torque to the at least one internal  
5 component.

1           40. A catheter, comprising:  
2 a hollow catheter body proximal member defining a distal  
3 region;  
4 a hollow catheter body distal member defining a proximal  
5 region, the distal and proximal members being respectively located such that  
6 one of the distal region of the proximal member and the proximal region of the  
7 distal member overlaps the other, thereby creating an overlapping region;  
8 a bond at the overlapping region securing the proximal member  
9 to the distal member; and  
10 at least one internal component located within at least the distal  
11 member.

1           41. A catheter as claimed in claim 40, wherein the bond comprises  
2 a thermal bond.

1           42. A catheter as claimed in claim 40, wherein the proximal member  
2 includes a side wall having an aperture formed therein.

1           43. A catheter as claimed in claim 42, further comprising:  
2 adhesive material connecting the proximal member to the at  
3 least one internal component, at least a portion of the adhesive material being  
4 in the vicinity of the side wall aperture.

1           44. A catheter as claimed in claim 40, wherein the at least one  
2 internal component comprises a guide coil.

1           45. A catheter as claimed in claim 40, wherein the at least one  
2 internal component comprises a steering center support.

1           46. A catheter as claimed in claim 45, wherein the at least one  
2 internal component comprises a sleeve covering at least a portion of the  
3 steering center support.

1           47. A catheter as claimed in claim 40, wherein the adhesive extends  
2 around the periphery of the internal component.

1           48. A catheter as claimed in claim 40, wherein the distal member  
2 includes at least one energy transmission element.

1           49. A catheter as claimed in claim 48, wherein the at least one  
2 energy transmission element comprises a tip energy transmission element,  
3 and the at least one internal component is connected to the tip energy  
4 transmission element.